

Determinants of capital structure in automobile companies in India

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ABSTRACT

The motive of the study is to examine the determinants of capital structure in automobile companies in India. The sample consists of five commercial vehicle manufacturers. The study used five years time data from 2013-14 to 2017-18. This study has been constructed with the strength of analytical examination of financial data. The selection of suitable dependent and independent variable is computed on the basis of the earlier seminal work in capital structure. The ADF, correlation, regression, and efficiency analyses have been performed to analyze the data collected. Results revealed that financial performance has been influenced by raw material supply, constant price, and policies of management, marketing strategy, business planning, profitability, turnover potential, and productivity. Capital structure is mostly determined by growth rate, size of the firm, non-debt tax shield, and business risk is not statistically significant, but tangibility and profitability ratio are statistically significant. Operational efficiency of automobile companies mainly influenced by profitability and productivity aspects.

1. Introduction and rationale of the study

Capital is utmost important factor for production of any product, it has a cost. The debt capital bears interest as cost of capital of the firm; it should be paid irrespective of profitability position of the firm. At the same time for equity capital bears dividend as the cost of capital, it should be paid when the company generates profit, but there is no fixed amount and obligation. Therefore, capital is expensive; it is mainly significant for the management to determine an optimum capital structure for their firms. The capital structure is mainly concerned with the ratio of debt and equity capital is employed in the firm. Moreover, the use of debt financing is considered as gearing or leverage. It may maximize the value of the firm. Therefore, capital structure of a firm should satisfy various aspects connected with industry, economy and company specific factors.

Capital structure decision is the key decision in financial affairs of a firm. It deals with how a corporate firm finance its various assets. A firm needs capital for financing of its fixed assets and for permanent working capital. The most popular source of financing to business firms includes, equity and debt, and mostly combination of both employed. If a business firm financed its assets through debt is believed to be a cheaper source of financing, it effects in elevation of riskiness of a firm attributing to decreased financial flexibility, enhanced possibility of financial distress, possible reduction in credit rating among others. Moreover, need for collateral security, better liquidity and sustained coverage. The advantage of debt finance provides tax shelter, enhanced earning per share and better return on equity. Similarly, equity financing bears certain benefits as well. Equity finance doesn't bear fixed financial cost; it allows freeing up more cash for reinvesting and increases value of the firm in the long standing. Sizable it consumes short-term gain of investors. Therefore, capital structure decisions are highly important for firms and optimal

capital structure is considered as perfect mix to raise value of the firm.

Capital structure of a firm gets influenced by several factors; this broadly can be classified as external factors and internal factors. External factors are consists of macro-economic factors such as, capital market conditions, tax policy, inflation rate, national income, gross domestic product and so on. Internal factors are concerned with individual firm characteristics such as, cost of capital, profitability, tax rate, growth prospects, size of the firm, and so forth. The factors are the main determinants of capital structure of a firm. The determinants of capital structure will vary from industry to industry. A business firm can use various sources of long-term finance, where each sources concerned with unique cost of capital. The two most important sources of finance are:

- Owned capital – Equity shares, preference shares, and retained earnings
- Owed capital – Long-term loans, debentures, bonds, etc.

While considering the significance of owned capital and owed capital, equity as a source of finance has lesser obligation than debt. Debt finance has fixed obligation with predetermined interest rate and specific tenure. Debt finance provides leverage and maximizes value of the business enterprises. Exclusive use of equity finance provides long-term burden and sizable earnings of the firm should be used to distribute dividend to the shareholders. Optimal use of debt and equity will bring benefit to the firm, shareholders and creditors of the firm. Therefore, the study has been formulated in this way to find the most important determinants of capital structure in automobile companies.

2. Automobile industry in India

Indian automobile sector has demonstrated a phenomenal growth in recent period. Automobile sector is highly involved with intense technology and one among the fastest growing industry in the country. A highly stylish and out shine industry, Indian automobile sector is expected to grow third largest in the world auto market by 2030, after China and USA. In fact, automobile sector has made tremendous development, specifically after the launch of economic liberalizations in the country. Liberalization initiative tenders a number of lending international players in automobile field have revealed interest in the Indian automobile sector. Moreover, a quantity of joint ventures has already been granted by the government of India in this sector. At present, Indian automobile sector produced a different variety of models in order to cater the needs of different industrial needs. In addition to that it produces different vehicles in two-wheelers, cars and heavy vehicles category. Indian automobile is the seventh largest in the world. Growing income levels and finance availability is the encouraging factor to much population to upgrade their two-wheeler to car. Furthermore, the growing used car market has also been a positive growth in the second-hand car market of the nation. Two-wheeler segment is the largest segment in Indian automobile market, car and commercial vehicle market placed subsequently. Ashok Leyland, Tata Motors, Eicher Motors, Forge, and Bharat Benz are the premier commercial vehicle producers in India.

3. Review of literature

There is a number of earlier studies in finance explain the capital structure determinants. Miller and Modigliani (1958) reveal that the value of the firm is independent of its capital structure. Myers (1984) presented Pecking Order Theory which reveals that the firms choose to use their internal sources of financing to equity financing. If internal financing do not meet the needs of the firm, they use external financing such as bank loans, and public debts. Profitable firms are less interested to prefer and use debt for new projects since they have the available funds in the form of retained earnings. Muthama et al. (2003) revealed that determinants of capital structure include size, tangibility, growth, risk and profitability and the findings reported were that business risk, tangibility and size are positively related to leverage whereas growth and profitability are negatively related.

Chen (2003) found the determinants of capital structure of companies, which rely more on short term debt rather than long term. The factors that usually affect western economies such as bankruptcy cost and earning volatility were not found to be significant. Maji& Ghosh (2007) revealed that size has positive relationship between equity and debt capital. Profitability has significant negative relationship with debt ratio. Tangible assets found to be positive and statistically significant with leverage and not disentangle the relationship between dividend and leverage. Mallikarjunappa&Goveas (2007) revealed that debt service capacity, and liquidity had contrary association with the debt-equity ratio. Vinayek& Gupta (2010) revealed that the factors like profitability, capital and collateral value of assets are significant to the debt equity ratio.

4. Objectives of the study

The main objective of the study is:

1. To check the present status of automobile industry in India.
2. To examine the factors influencing financial performance of automobile companies.
3. To find out the determinants of capital structure of Indian automobile companies.
4. To study the operational efficiency of Indian automobile companies.

5. Research methodology

5.1. Data and Sample

This study is analytical in nature; this study is based on secondary data of five commercial vehicle manufacturing automobile companies. The selected sample companies are manufacturing light commercial vehicles and heavy commercial vehicles including trucks and buses. The audited annual financial data of automobile companies has been used and data from 2013-14 to 2017-18 have been collected for the study. The following regression model has been considered to test the theoretical association between determinants of capital structure and characteristics of the firm. In the first stage, the data has been used to ascertain the capital structure and its determinants have been examined for multi-collinearity so as to get the perfect regression results. In the last stage regression has been run using excel for the selected companies resulting in the coefficients for every determinants. Accordingly, the determinants have been tested at 5% level of significance. The relationship has been tested by using Karl Pearson's model. The formula, variables and hypothesis are given below.

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6$$

Where,

X1 = Tangibility (TG)

X2 = Profitability Ratio (PR)

X3 = Growth Prospects (GP)

X4 = Size of the Firm (SF)

X5 = Non-debt Tax Shield (TS)

X6 = Business Risk (BR)

a = constant term of the model

bs= coefficients of the model

5.2. Variables

- **Dependent Variable (Y):** It is considered as the total of capital employed, which consists of net worth and total debt. Total debt consists of all borrowed funds from banks, bonds or debentures and other long-term borrowings. Net worth consists of equity share capital, preference share capital and retained earnings.
- **Independent Variables (Xn)**
 - **Tangibility (X1):** It is concerned with the proportion of fixed assets to total assets.
 - **Profitability Ratio (X2):** It is defined as the return on total assets.
 - **Growth Rate (X3):** It is defined as the compound growth rate of total assets.
 - **Size of the Firm (X4):** It is defined as the total asset of the firm.

- **Non-Debt Tax Shield(X5):** It is defined as the incentive that firm acquires from tax deduction against depreciation and interest payments other than long-term interest loan.
- **Business Risk (X6):** It is defined as the change in closing and opening operating cash flow.

5.3. Hypothesis of the Study

The following hypothesis has been proposed:

H₀: There is no significant association between capital structure and its determinants.

H₁: There is a significant association between capital structure and its determinants.

6. Results and discussions

6.1. Automobile Industry in India

Driven by the heavy revival in automobile sector, the demand for two-wheelers, passenger cars and commercial vehicles has been increased during the recent past. Automobile industry reported a strong growth, which is more than 25% during the past two decade. The growth pattern of automobile industry is presented in table-1.

Table-1: Growth of Indian Automobile Industry (Units in thousands)

Segment	2013-14	2014-15	2015-16	2016-17	2017-18
Truck & Bus	12367	13137	12839	14811	15668
LCV	4820	5320	5298	5739	6029
Tractor	3873	3934	3915	4923	5423
Off the Road	115	141	136	161	191

Source: SIAM

Table-1 presents the growth of Indian automobile industry; it manufactured 12367 thousand truck and buses, 4860 thousand light commercial vehicles, 3873 thousand tractors and 115 thousand off the road vehicles in the year 2013-14. The number has been increased to 15668 thousand truck and buses, 6029 thousand light commercial vehicles, 5423 thousand tractors and 191 thousand off the road vehicles in the year 2017-18. Roughly, 5-8% growth has been found in all segment vehicles.

6.2. Factors influencing Financial Performance

Financial performance of automobile companies has been influenced by large number of factors. The factors such as, raw material supply, constant price, policies of management, marketing strategy, business planning, profitability, turnover potential, and productivity. In order to measure the stationary level along with its order of integration. The results for the unit test for the different variables are given in table-2.

Table-2: ADF Unit Root Test Results

Variables	ADF Test	ADF lag	95% Confidence	Order of Integration	Stationary Level @ 5%
Raw material supply	-8.147	1	-3.4534	I (1)	Good
Constant price	-11.275	1	-3.4542	I (1)	Good
Policies of management	-6.125	1	-3.4542	I (1)	Good
Marketing strategy	-7.158	1	-3.4534	I (1)	Good
Business planning	-7.236	1	-3.4534	I (1)	Good
Profitability	-8.214	1	-3.4542	I (1)	Good
Turnover potential	-13.973	1	-3.4534	I (1)	Good
Productivity	-7.784	1	-3.4542	I (1)	Good

Source: ICRA

Table-2 reveals Augmented Dickey Fuller (ADF) test and the results express that all variables are equally have stationary level. The results shows that all variable are integrated of order one which means, all variables are I(1) variables at the 5% level of significance. All other variable are found to contain unit root, these results are consistent with similar that most material and financial variables and operation of the automobile companies stands stationary. Thus, the profitability of automobile has different stationary process. The remaining factors are equally possess the stationary level at 5% significance is good. It is clear that these variables are completely rely on the concept of financial performance is equally disturbed periodically as per the uniqueness of the problem. While applying this test, the results are ranging from -6.125 to -13.973 for all the variables and significant at 5%.

6.3. Determinants of Capital Structure

Collinearity is the term used to explain how one variable associate with another variable. If the two variables are highly correlated, then basically express same information. There should be any statistically multicollinearity since if they exist, then those independent variables are out of work and do not add any foretelling value to dependent variable. Therefore, Pearson correlation co-efficient has been administered to determine collinearity among the independent variables. The independent variables possessing collinearity at 0.70 or more would not be considered in regression analysis. The results are presented in table-3.

Table-3: Inter Correlation Matrix of Independent Variables

	TG	PR	GP	SF	TS	BR
TG	1.00					
PR	0.26	1.00				
GP	0.58	0.18	1.00			
SF	0.51	0.57	0.22	1.00		
TS	0.48	0.31	0.37	0.39	1.00	
BR	-0.02	0.11	0.27	-0.05	0.36	1.00

Source: ATMA

Table-3 reveals the highest correlation value 0.48 exist between growth prospects and tangibility of the firm. Followed by size of the firm have highest value 0.47 with profitability ratio and 0.41 with tangibility. In addition to that tax shield have

highest association with tangibility of the firm. Business risk (-0.02) has negative correlation with tangibility aspect of the firm. Similarly, business risk (-0.05) has negative correlation with size of the firm.

Table-4: Regression Results

	Coefficients	SE	t Statistics	P-Value
Intercept	0.4688	0.1892	2.415	0.0156
TG	-0.6674	0.2046	-3.125	0.0025
PR	1.6255	0.2356	6.578	1.5265
GP	0.0747	0.2014	0.354	0.3548
SF	-0.1567	0.0572	-1.864	0.1675
TS	2.4254	2.0356	1.268	0.2323
BR	-0.0354	1.0278	-0.456	0.6336
Multiple R	0.5326			
R ²	0.2837			
Adjusted R ²	0.2635			
SE	0.6524			
Observations	25			

Source: ATMA

Table-4 reveals that intercept is α in the set equation, standard error measures the variability in approximation of the coefficient and lower standard error means coefficient is closer to the true value of the coefficient. Result shows that growth rate; size of the firm, non-debt tax shield, and business risk is not statistically significant. However, tangibility and profitability ratio are significant at 1% level of significance. There is very little support for the model, R-square value of 28% represents a very low support for the model indicating that 28% of the information of dependent variable is predicted by the model. However, in all, tangibility and profitability ratio are highly significant.

6.4. Operational Efficiency of Automobile Companies

The operational efficiency of the automobile companies can be measured through the ratio of output to input. Two or more variables can be addressed by constructing an efficiency frontier from weighted output and weighted input. Variables on the frontier are assigned an efficiency score of 1 while those inside receive scores ranges from 0 to 1. In this study, profitability, productivity, and turnover are considered as output alternatively, capital employed, number of sales outlets, and total operating expenses are taken as input. Based on the analysis framework five automakers have been considered. Table-5 presents operational efficiency scores from 2013-14 to 2017-18.

Table-5: Operational Efficiency

Companies	2013-14	2014-15	2015-16	2016-17	2017-18
Ashok Leyland	0.89	0.90	0.95	0.96	0.97
Tata Motors	0.94	0.97	0.92	0.93	0.93
Eicher Motors	0.92	0.93	0.91	0.93	0.96
Forge	0.93	0.92	0.90	0.87	0.91
Bharat Benz	0.93	0.93	0.86	0.89	0.92

Source: ATMA

Table-5 shows operational efficiency of automobile companies. The trend of Ashok Leyland shows that operational efficiency ranges from 0.89 to 0.97 during the period from 2013-14 to 2017-18. Similar trend also continued in Tata

Motors, the operational efficiency ranges from 0.94 to 0.97 during the period from 2013-14 to 2017-18. Moreover, Eicher Motors ranges from 0.92 to 0.96, Forge Motors ranges from 0.87 to 0.93, and Bharat Benz ranges from 0.86 to 0.93 during

the period from 2013-14 to 2017-18. Put together, the operational efficiency is found at satisfactory level. The level of operation is matched as the demands in both local and international market.

7. Conclusion

The commercial vehicles in India possess the prominent share in automobile industry. Profitability position of automobile companies stands at satisfactory level and constantly producing handsome returns. The financial performance of automobile companies has been influenced by raw material supply, constant price, and policies of management, marketing strategy, business planning, profitability, turnover potential, and

productivity factors. The determinants of capital structure that is, profitability ratio, tangibility, growth rate, size of the firm, non-debt tax shield, and business risk have failed to show statistical significant and R-square has consistently been of weak support for the model. Operational efficiency of automobile companies mainly influenced by profitability and productivity aspects. Operational efficiency is found in effective manner in order to meet the growing demand of the market. Operational efficiency of firms reveals that it which continuously rising from the past five years time period. The development made in the industry during the recent past is exceptionally good.

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